

removing material from the substrate, the removal of material not exceeding the thickness of the material, the removal performed in a translational relationship to the substrate;

producing, based on the step of removing material, a feature in the material having a surface of optical quality, the vertical dimension of the relief in the material being between 10 microns and 600 microns.

REMARKS

Status

Applicants appreciate the time and consideration of the Examiner in the examination of this application. Applicants also appreciate the interview of December 10, 2002. Claims 14, 16-20, 22-25, and 27 stand rejected as allegedly unpatentable under 35 U.S.C. §103 over US Patent 4,016,855 to Mimata et al. (hereinafter Mimata) in view of US Patent 5,069,003 to Hogregfe et al. (hereinafter Hogregfe). Claims 15, 21, and 26 stand rejected as allegedly unpatentable under 35 U.S.C. §103 over Mimata in view Hogregfe, and further in view of U.S. Patent 5,868,125 to Maoujoud (hereinafter Maoujoud).

Amendments

Claims 14 and 27 have been amended to more clearly point out the invention. It is believed that no new matter has been added. Specifically, an antecedent basis error has

been corrected in Claim 27. Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned **“Version with Markings to Show Changes Made”**.

The Informality in Claim 14

Applicants appreciate the thoroughness of the review of the Claims in this Examination. The Examiner noted a misspelling in Claim 14 in the last paper. A review of the filings indicated that the proper spelling was used in the original filing, and has not been officially pointed out as being changed. As such, Applicants are not sure if the term “least” in Claim 14, line 4, has officially changed to “lest.” Such misspelling was the unfortunate result of not having an electronic copy and typing in the claim from hard copy. Applicant shall certainly make an official amendment to change the word, but the indications in the file show that the word has not been changed, except in that it appears in the last paper as such.

The §103 rejection of 14, 16-20, 22-25, and 27

Claims 14, 16-20, 22-25, and 27 stand rejected as allegedly unpatentable under 35 U.S.C. §103 over Mimata in view of Hogregfe. Claims 14 and 27 are independent claims. This rejection is respectfully traversed.

According to the Manual of Patent Examining Procedure (M.P.E.P.), in order to find a proper rejection under §103, every one of the claimed elements must be found in the cited art.

Claim 14

Claim 14, as rewritten, is directed to a method for making microcomponents exhibiting microreliefs of an optical quality. As rewritten, the method includes the steps of:

- 1) making an *optical quality* microrelief for each microcomponent by mechanical machining of the substrate, the mechanical machining comprising moving at least one tool translationally and parallel to the substrate, the mechanical machining not carried out through the thickness of the substrate; and
- 2) cutting out the microcomponents in the substrate such that the individual microcomponents or groups of microcomponents are separated from each other.

1. “[M]achining . . . not carried out through the thickness of the substrate”

Mimata does not show the mechanical machining that stops short of being carried out through the thickness of the substrate. As for Hogregfe, the Office Action reads “Hogregfe teaches a similar process (only the cuts are not made parallel to the substrate and the cuts are carried through the thickness of the substrate), wherein microcomponents of an optical quality are formed.” Thus, by this admission, Hogregfe does not show that the portion of Claim 14 where the “mechanical machining [is] not carried out through the thickness of the substrate[.]”

2. “[M]aking an *optical quality* microrelief . . . by mechanical machining of the substrate”

First, Mimata does not show or suggest, as admitted in the Office Action (p. 3, lines 6-7) a mechanical machining of the substrate to produce an optical quality microrelief. As such, at least this feature, among others, is lacking.

Next, Hogregfe does not show or suggest this feature either. Looking in detail at Hogregfe, the cutting of the substrate does not produce an optical quality microrelief.

There is *no mention at all* of the particular features that the cutting step of Hogregfe produces. The only mention of the cutting process in Hogregfe states, *in its entirety*,

“[a] number of grooves 18 are cut into the plate 18 by a dicing saw[.]”

If the Examiner contends that this cut is made of the order of “optical quality”, Applicants strongly suggest that the Examiner specify directly where in the reference this may be found. In short, no support exists in Hogregfe that the cut be made with *any* particular characteristics, vis a vis a specific quality of optical finish.

In Hogregfe, the cuts are made into particular substrates. However, whatever quality the substrate may be prior to the cut, the quality may be dramatically altered by the cut. Accordingly, a cut made with an “optical quality” is not found, explicitly or implicitly, in the Hogregfe reference.

Fig. 4 of Hogregfe shows the channel cut in the substrate. However, there is no indication that the mechanical machining is performed to produce a feature of optical quality.

In fact, Hogregfe solely refers to the machining process as “a number of grooves [] are cut into the plate [] by a dicing saw [].” There is no mention of the quality of the dicing saw, how fine the finish is, or any mention of how to accomplish a finish. In this manner, Hogregfe does not show or suggest “making an optical quality

Claims 16-20 and 22-25

Claims 15-26 depend from Claim 14. As such, the remaining claims, being dependent on an allowable claim, are themselves allowable for the reasons stated above, among others. Accordingly, the rejections of Claims 16-20 and 22-25 in view of Mimata are respectfully traversed.

Claim 27

Claim 27, as well as new Claims 28 and 29, contain many of the same salient features as discussed above in reference to Claim 14. Accordingly for the reasons stated above in relation to Claim 1, as well as other reasons, Applicants respectfully traverse the rejection of Claim 27 under Mimata in view of Hogregfe.

The §103 Rejection of Claims 15, 21, and 26

over Mimata in view of Hogregfe and further in view of Maoujoud

Claims 15, 21, and 26 depend from Claim 14. Since Claim 14 is ostensibly allowable over Mimata in view of Hogregfe, it is believed that these claims are as well. In addition to the portions of Claims 14 that are not shown, Claims 15, 21, and 26 add

other portions as well. Maoujoud does not show or suggest the shortcomings of Mimata in view of Hogregfe. As such, the rejections of Claims 15, 21, and 26 over Mimata in view of Hogregfe and further in view of Maoujoud are traversed.

Request for Allowance

It is believed that this Amendment places the above-identified patent application into condition for allowance. Early favorable consideration of this Amendment is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

Respectfully submitted,
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“Version with Markings to Show Changes Made”

14. (Thrice Amended) A method for making microcomponents exhibiting microreliefs of an optical quality, comprising:

[-] making a microrelief of an optical quality for each microcomponent by mechanical machining of the substrate, the mechanical machining comprising moving at lest one tool translationally and parallel to the substrate, the mechanical machining not carried out through the thickness of the substrate; and

[-] cutting out the microcomponents in the substrate such that the individual microcomponents or groups of microcomponents are separated from each other.

27. (Amended) A method for making microcomponents exhibiting microreliefs of an optical quality, comprising:

making a relief of optical quality for each microcomponent by mechanical machining of the substrate, the mechanical machining comprising moving at lest one tool translationally and parallel to the substrate, the vertical dimension of the microrelief being in the range between 10 microns to 600 microns; and

cutting out the microcomponents in the substrate such that the individual microcomponents or groups of microcomponents are separated from each other.

22. A method of making a microcomponent in a substrate of a certain thickness, the method comprising:

mechanically machining, by moving at least one tool translationally relative to the material, a microcomponent in the substrate;

producing, as a result of the mechanically machining, an optical quality surface on a microrelief scale in the substrate;

separating the microcomponent from the remainder of the substrate.

22. A method of making a microcomponent in a material of a certain thickness, the method comprising:

removing material on a microrelief scale from the substrate, the removal of material not exceeding the thickness of the material, the removal performed in a translational relationship to the substrate;

producing, based on the step of translationally removing material, a microrelief feature in the material having a surface of optical quality.